

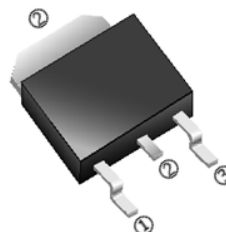
RoHS Compliant Product  
A suffix of "-C" specifies halogen free

## DESCRIPTION

The SSD25P06-C is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent  $R_{DS(ON)}$  and gate for most of the synchronous buck converter applications.

The SSD25P06-C meet the RoHS and Green Product with function reliability approved.

## TO-252(D-Pack)



## FEATURES

- Advanced high Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

## MARKING

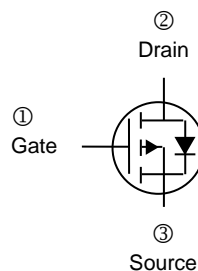


## PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

## ORDER INFORMATION

Part Number	Type
SSD25P06-C	Lead (Pb)-free and Halogen-free



## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current @ $V_{GS}=10\text{V}$ <sup>1</sup>	$T_C=25^\circ\text{C}$	-25	A
	$T_C=100^\circ\text{C}$	-18	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-50	A
Power Dissipation <sup>1</sup>	$T_C=25^\circ\text{C}$	40	W
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
<b>Thermal Resistance Ratings</b>			
Maximum Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Maximum Thermal Resistance Junction-Ambient		110	
Maximum Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	3.1	

**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

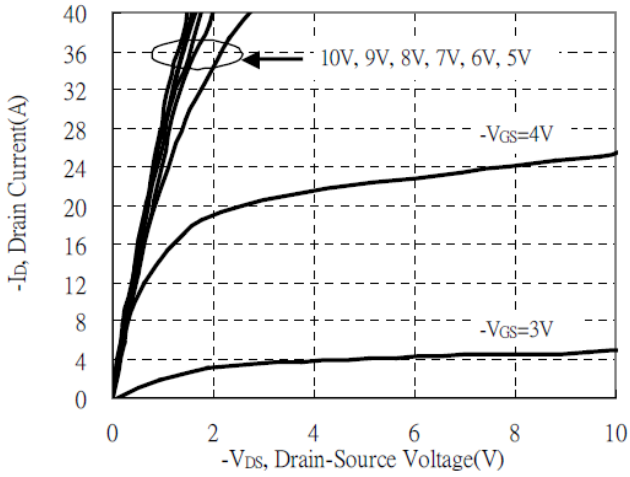
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Drain-Source Breakdown Voltage	$BV_{DSS}$	-60	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5		$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$	
Forward Transfer Conductance	$g_{fs}$	-	13	-	S	$V_{DS} = -5\text{V}, I_D = -6\text{A}$	
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 20\text{V}$	
Drain-Source Leakage Current	$I_{DSS}$	$T_J=25^\circ\text{C}$	-	-	-1	$\mu\text{A}$	$V_{DS} = -48\text{V}, V_{GS}=0$
		$T_J=125^\circ\text{C}$	-	-	-25		
Static Drain-Source On-Resistance <sup>3</sup>	$R_{DS(ON)}$	-	33	40	m $\Omega$	$V_{GS} = -10\text{V}, I_D = -10\text{A}$	
		-	45	50		$V_{GS} = -4.5\text{V}, I_D = -5\text{A}$	
Total Gate Charge	$Q_g$	-	35.1	-	nC	$I_D = -6.2\text{A}$ $V_{DS} = -30\text{V}$ $V_{GS} = -10\text{V}$	
Gate-Source Charge	$Q_{gs}$	-	7.1	-			
Gate-Drain ("Miller") Change	$Q_{gd}$	-	5.4	-			
Turn-on Delay Time	$T_{d(on)}$	-	5.2	-	nS	$V_{DD} = -30\text{V}$ $I_D = -6\text{A}$ $V_{GS} = -10\text{V}$ $R_G = 3\Omega$	
Rise Time	$T_r$	-	23.3	-			
Turn-off Delay Time	$T_{d(off)}$	-	73.8	-			
Fall Time	$T_f$	-	42.1	-			
Input Capacitance	$C_{iss}$	-	1993	-	pF	$V_{GS}=0$ $V_{DS} = -30\text{V}$ $f=1\text{MHz}$	
Output Capacitance	$C_{oss}$	-	115	-			
Reverse Transfer Capacitance	$C_{rss}$	-	63	-			
<b>Source-Drain Diode</b>							
Diode Forward Voltage <sup>1</sup>	$I_S$	-	-	-4.2	A		
Continuous Source Current <sup>2</sup>	$I_{SM}$	-	-	-16			
Forward On Voltage <sup>3</sup>	$V_{SD}$	-	-0.72	-1.2	V	$I_S = -1\text{A}, V_{GS}=0$	
Reverse Recovery Time	$T_{rr}$	-	32	-	nS	$I_F = -6\text{A}, dI/dt=100\text{A}/\mu\text{s}$	
Reverse Recovery Charge	$Q_{rr}$	-	44	-	nC	$T_J=25^\circ\text{C}$	

Notes:

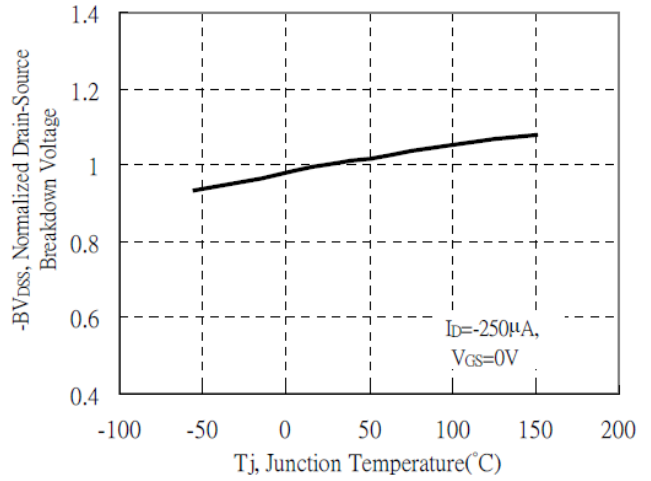
- The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2oz copper.
- The power dissipation is limited by 150°C junction temperature.
- The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

**TYPICAL CHARACTERISTICS CURVE**

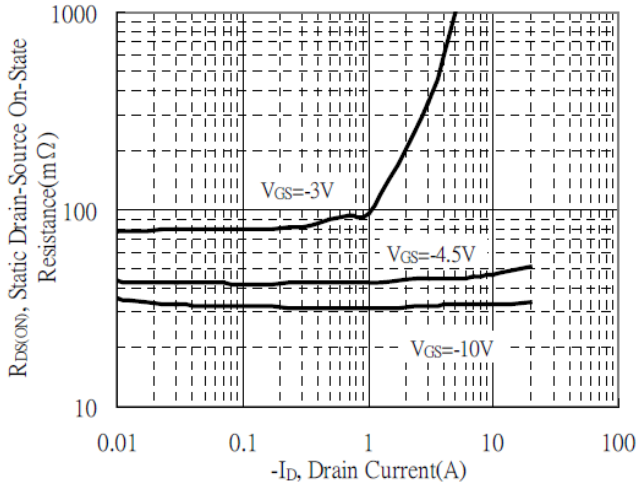
Typical Output Characteristics



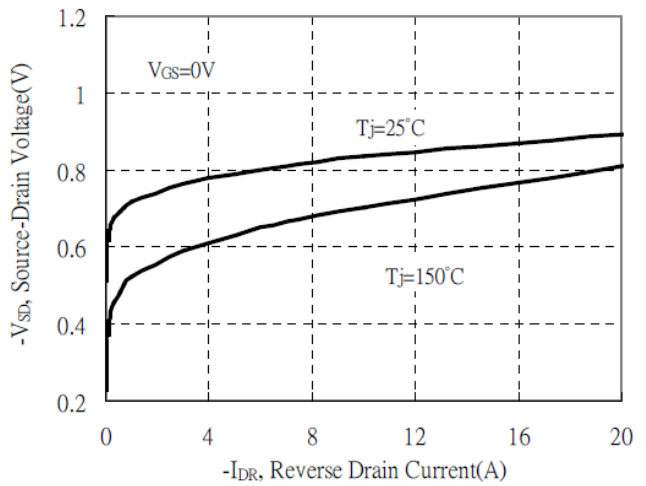
Brekdown Voltage vs Temperature



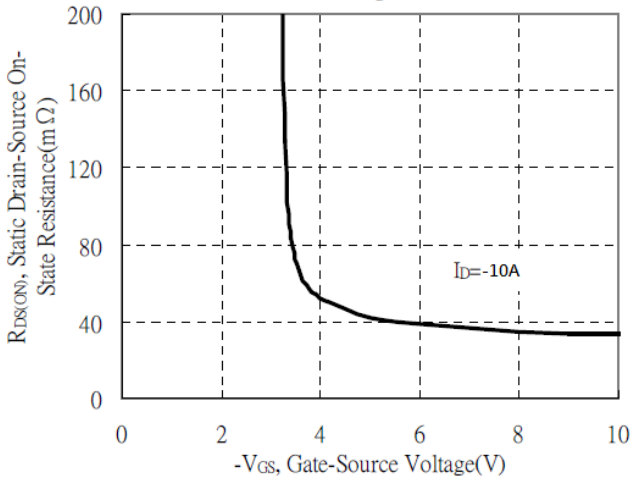
Static Drain-Source On-State resistance vs Drain Current



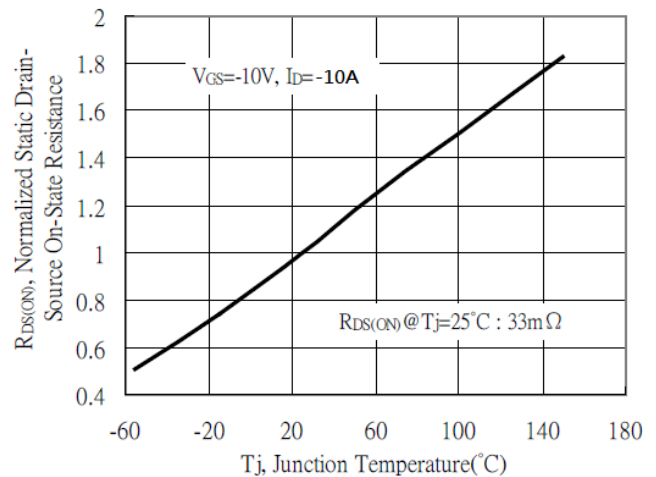
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

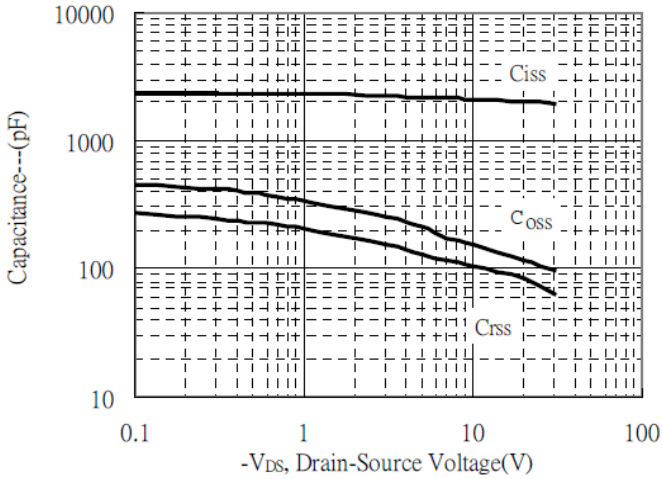


Drain-Source On-State Resistance vs Junction Temperature

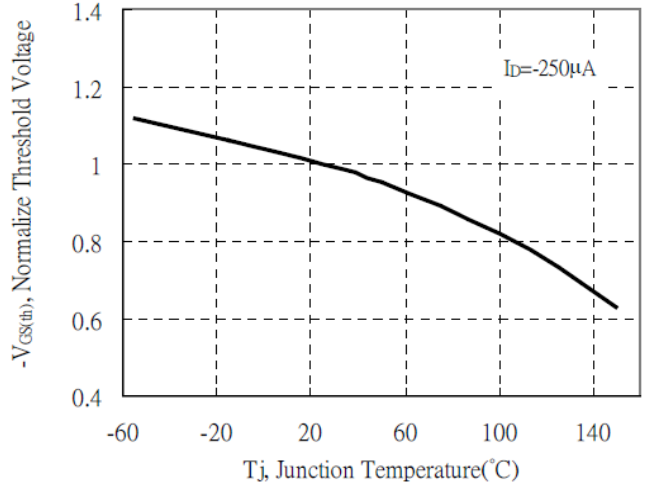


**TYPICAL CHARACTERISTICS CURVE**

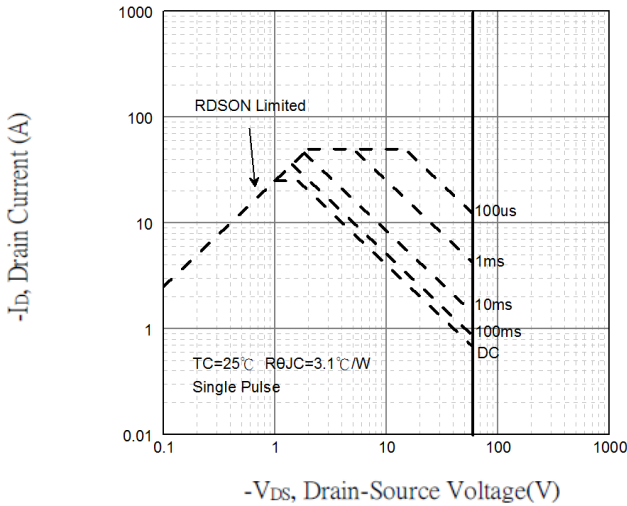
Capacitance vs Drain-to-Source Voltage



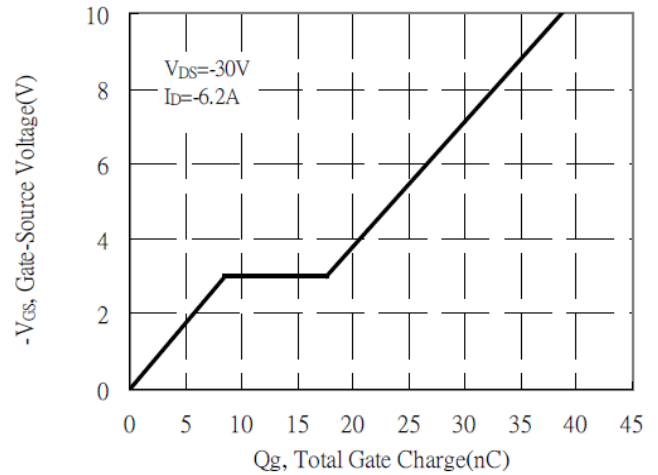
Threshold Voltage vs Junction Temperature



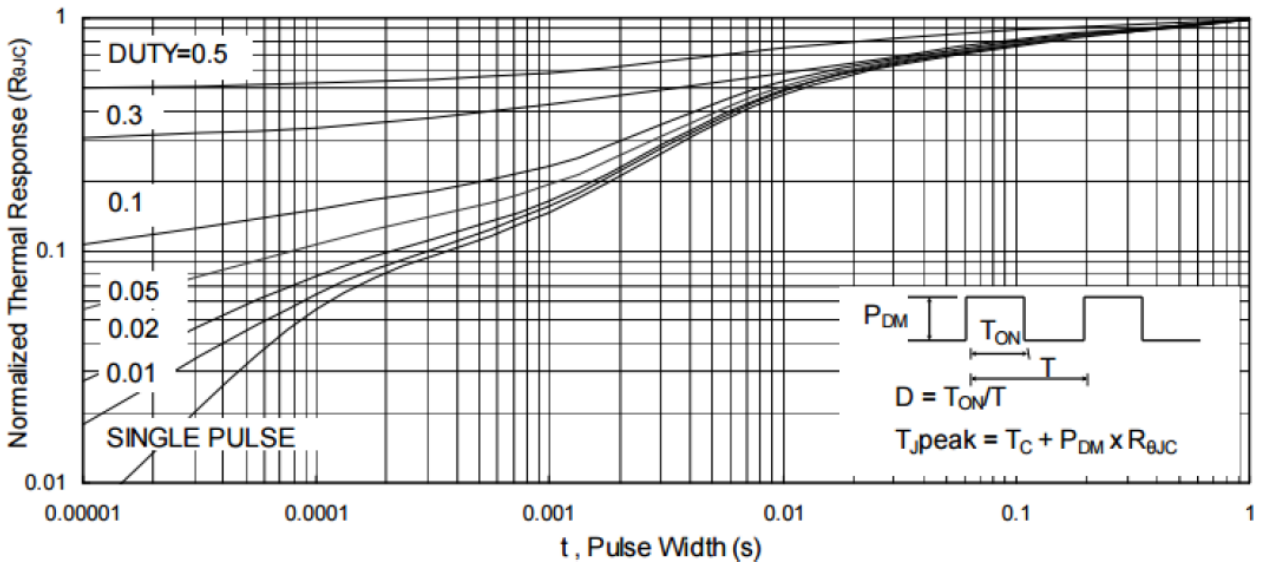
Maximum Safe Operating Area



Gate Charge Characteristics

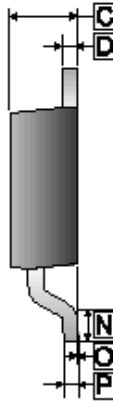
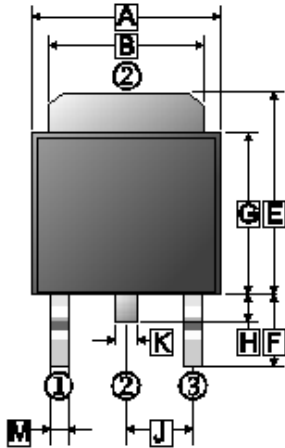


Transient Thermal Response Curves



**PACKAGE OUTLINE DIMENSIONS**

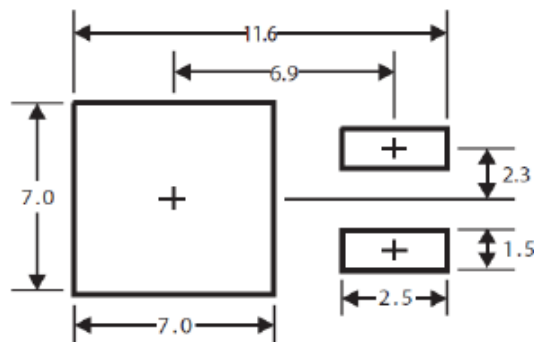
TO-252



REF.	Millimeter	
	Min.	Max.
A	6.30	6.90
B	4.95	5.53
C	2.10	2.50
D	0.40	0.90
E	6.00	7.70
F	2.90 REF.	
G	5.40	6.40
H	0.60	1.20
J	2.30 REF.	
K	0.89 REF.	
M	0.45	1.14
N	1.55 TYP.	
O	0	0.15
P	0.58 REF.	

**MOUNTING PAD LAYOUT**

TO-252



\*Dimensions in millimeters